Wireless Telecommunications Interoperability Standardization for Justice/Public Safety/Homeland Security

Outputs

- Wireless telecommunications Statement of Requirements (SOR) for Public Safety.

- Functional and performance specifications for Project 25/TIA digital radio and system standards.

- Standardized measurement methods for testing Project 25 radios and systems.

Five steps are needed to specify and implement wireless systems for communications and information exchange to allow seamless interoperability among public safety agencies and practitioners: (1) define *user requirements* for communications and information exchange, (2) specify the *architecture framework* to support the communications, (3) develop *standards* for the systems, (4) conduct *technology performance tests* to evaluate proposed solutions for the standards, and (5) conduct *vendor products functional tests* to validate that tested equipment supports the standards prior to user implementation. ITS is the common technical thread through all these steps in direct support of the justice/public safety/homeland security community users to standardize their wireless systems.

ITS is conducting a technical program aimed at facilitating effective interoperability and information sharing among dissimilar wireless telecommunications systems within the justice/public safety/homeland security community. The primary focal points of the program are: (1) the identification and delineation of wireless telecommunications functional and interoperability requirements, (2) coordination with major Federal players and local, state, and tribal public safety practitioners to collegially develop an architecture framework that is in effect "a system of systems," and (3) the identification and/or development of standards that address the defined requirements and are in concert with the architecture framework. Standardization efforts are aimed at allowing local, state, tribal, and Federal agencies to exchange communications and information.

The ITS program is sponsored by a number of different Federal departments and programs with a keen interest in public safety interoperability, including: National Institute of Standards and Technology (NIST) Office of Law Enforcement Standards (OLES), National Institute of Justice (NIJ) CommTech Program (formerly AGILE Program), Department of Justice Office of Community Oriented Policing Services (COPS), National Communications System (NCS), Department of Homeland Security's Public Safety Wireless Communications (SAFECOM) Program, Federal Partnership for Interoperable Communications (FPIC) (formerly Federal Law Enforcement Wireless Users' Group (FLEWUG)), and the Department of Homeland Security Chief Information Officer's Wireless Management Office (WMO).

Wireless Telecommunications Statement of Requirements (SOR)

The first comprehensive set of wireless telecommunication requirements for public safety is now available, supplementing the PSWAC (Public Safety Wireless Advisory Committee) Final Report (1996). The development of any far-reaching nationwide strategy for wireless interoperability (and the standards to implement it) demands that practitioners' needs be clearly understood before approaches are drawn. On behalf of the public safety community, ITS took the lead in developing a contemporary SOR in 2003. The final document underwent practitioner review and was released in April 2004. The document title is *Statement of Requirements for Public Safety Wireless Communications and Interoperability – Version 1.0*, and is available at http://www.safecomprogram.gov/files/ SCI_Statement_of_Requirements_v1_0.pdf. This SOR is focused on the functional needs of public safety first responders — Emergency Medical Services (EMS) personnel, fire fighters, and law enforcement officers — to communicate and share information as authorized when it is needed, where it is needed, and in a mode or form that allows the practitioners to use it effectively. The communications mode may be voice, data, image, video, or multimedia that includes multiple forms of information. To keep the emphasis on functional requirements, the SOR avoids specifying either technologies or business models (i.e., whether requirements should be addressed through owned products and systems, or via commercial services).

Wireless Communications and Information Exchange Architecture Framework

Through its sponsors, the Institute is supporting the development of an architecture framework for wireless communications and information exchange interoperability. Working with those in the Federal Government responsible for the final plan, most notably SAFECOM, ITS is expediting the overall Federal effort by taking advantage of background engineering work already conducted at the Institute and elsewhere. For example, ITS has investigated frameworks for high-level enterprise architectures, and is also reviewing and analyzing the wireless integration activities being performed, and being contemplated, by local, state, tribal, and regional governmental organizations to characterize common architectural elements that have been successfully applied in the field. Governance and other non-technical issues have also been researched. Once the architecture framework (system of systems) document matures, it will be reviewed and approved by the practitioners as was the SOR. The framework will then guide the development of standards that support it.

Project 25/TIA TR-8 and Project MESA

The Institute contributes widely to Project 25, a program devoted to developing a comprehensive series of interoperability standards for the new generation digital land mobile radio (LMR) operating in narrowband channels for public safety applications. Comprised of representatives from the Association of Public-Safety Communications Officials (APCO) International, the National Association of State Telecommunications Directors (NASTD), industry as represented by the Telecommunications Industry Association (TIA), and local, state, tribal, and Federal governments, Project 25 is closely aligned with TIA's Standards Committee TR-8 (TR-8 is the body that formally develops, approves and releases Project 25 standards as TIA 102 series documents). While Project 25/TIA TR-8 "Phase II" work is now addressing interoperability standards for the network portions of Project 25, the specification of interface standards for (Phase I) 12.5-kHz digital LMRs also continues. "Phase III" (also referred to as Project 34 and Project MESA) is a joint effort between TIA and

Two ITS engineers recording audio noise in a typical Public Safety first responder's noise environment.

the European Telecommunications Standards Institute and is focused on the development of standards for broadband mobile data applications.

An ITS engineer represents NCS on the Project 25 Steering Committee, and chairs the Project 25 Encryption Task Group where Information System Security (INFOSEC) standards have been developed. ITS also contributes heavily to other TIA TR-8 committees and Project 25 task groups. For example, ITS' technical and editorial efforts have enabled the completion of initial drafts of two new TIA standards that will define Inter-RF Subsystem Interface (ISSI) measurement methods and specify recommended ISSI performance objectives. ITS continues to have the responsibility for developing procedures to test the interoperability of Project 25 radio systems. To date, procedures have been developed to test radios employing conventional voice, encrypted voice, over-the-air re-keying, trunking, and data applications.

Project MESA efforts have concentrated on defining the public safety requirements for broadband mobile applications. To date, the Institute has provided user operational requirements to Project MESA. These requirements represent the United States position. An ITS engineer was elected Chair of the Technical Specification Group — Systems. One objective of the Chair is to ensure that public safety user requirements — rather than industry solutions — are the drivers of the specifications and standards that are developed.

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